

French Patent No. 2 303 136 A1

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INSULATING COVERING IN THE SHAPE OF TILES OR A STRIP

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The present invention is related to a flexible insulating covering in the form of tiles or a strip, designed to be applied to ceilings, walls and floors, behind heating systems, on walls [sic], partitions, in parts of a building, vehicles or containers.

From DT-AS 1 150 941 a soundproofing carpet is known in which a layer of synthetic base material is covered with a covering sheet formed from paper or synthetic material, mastic being applied between the lower layer and the covering sheet, in particular so as to stop the conduction of sound, like a double wall. This type of carpet is very expensive to manufacture and, given its special structure and its great weight, it can only be used by clearly specialized

personnel. In addition, from German Utility Model No. 1 956 931, a floor covering is known that is characterized by an upper layer with short pile, a very resilient lower layer and an impermeable elastic intermediate layer which connects these two layers. This covering is very expensive to manufacture because it can no longer compete with modern floor coverings typically manufactured. In addition, from German Utility Model No. 1 701 462, a double carpet is known that is made of a layer of elastic honeycomb synthetic material on the side turned toward the wall. It is true that this carpet is less expensive to manufacture than the preceding ones but its soundproofing action, ensured only by the layer of honeycomb material, is insufficient, in particular in new constructions with poorly insulated and echoing thin walls. In addition, from German Utility Model No. 1 901 419, a covering element in relief is known, in particular a covering material for the wall similar to a carpet in which different laminated materials present, because of seams passing through, in particular with stitches, a structure such that at the same time cavities can be formed relative to the wall to be soundproofed and impart a relief feel to the visible surface. The manufacture of these coverings is very expensive; in addition, the application by procedures, in particular by means of adhesives for upholstery, is made difficult by the fact that the adhesive can penetrate to the visible surface by the pores formed as aeration openings and fill up the latter and change the surface. Finally from German Utility Model No. 1 946 044 a flocked floor covering is known that is composed of layers of laminated elastic material and with a flocking applied to the upper layer.

The manufacturing procedure of the floor covering is extremely expensive; in addition, the quality and the resistance to wear and tear of the superficial flocking is not satisfactory in the long run.

The invention has a goal, relative to the preceding, of providing an insulating covering in the form of tiles or a strip that especially may be less expensive to manufacture than the prior coverings, for which the thermal and sound insulation meets standardized conditions and in which the surface has a quality equivalent to the true textile carpets or carpets from synthetic material. A notable part of the problem to be resolved is to see to it that the covering is as simple to use as possible even when being applied by unspecialized persons or do-it-yourself enthusiasts.

The invention solves the problem by a covering of the type defined above, characterized by a layer of soft foam of polyester or polyether with a thickness of 1.0-30 mm, preferably 3.0-20 mm and a bulk density of 20-40 kg/m<sup>3</sup>, to which is laminated, above, by selection, a textile, fibrous mat, paper, slab foam or artificial leather support, to which are directly anchored fibers of synthetic material, and below, a textile, wallpaper, fibrous mat or a sheet of synthetic material. It appeared particularly advantageous to use an upper substrate formed from a support

fabric to which fibers of synthetic material are anchored directly for manufacturing a covering of this type.

For this purpose, to manufacture this substrate, possibly already laminated to the layer of foam, a polymer film is melted on the support as a result of a heated spreading surface, and then it is flocked with fibers directly anchored in the support fabric. This substrate or its fibers can next be printed, embossed, patterned, impregnated, or finished in any known manner.

The invention is described below in connection with application examples represented by the drawings in which:

Figure 1 is a sectional view of a first application method of a covering of this type;

Figure 2 shows another method of application, and

Figure 3 illustrates a more perfected application method of the covering.

In Figure 1, on a soft foam layer of polyester or polyether are laminated, above, a support in which are anchored shaped fibers 12 formed from a synthetic material such as polyethylene, polypropylene, polyvinyl chloride, or polyamide. Below the layer of foam 10 is laminated a conventional wallpaper 13, by means of which the product can simply be put to use, as with normal textile wall coverings without requiring a special primary layer, glue, or adhesive.

Figure 2 shows a covering in which, on a layer of soft foam 20 are laminated, below, a substrate 24 being used for installation or gluing, for example a wallpaper, textile, fibrous mat, slab foam, or synthetic leather, and above a support 21 in which are anchored fibers of synthetic material 22 that have been embossed, molded or deformed into a design by conventional procedures, to obtain regions 23 that give a design or texture.

Figure 3 shows an application example of a covering which is suitable in particular for installation by an amateur; on one layer of soft foam 30 is laminated, below, a covering of paper 33 provided in turn with a self-adhesive covering 34 and a protective paper 35 covering the latter. Above, on this layer of foam 30 is laminated a support 31 which can, for example, be a paper, textile, or fibrous mat, in which are anchored fibers 32 that have been deformed in their entire surface, for example, by embossing or by another heat or mechanical treatment, such that there are no longer shaped fibers. For installation, one can simply detach the protective paper and glue the adhesive covering on the surface to be coated.

Hereafter, in connection with a practical application example is described a form of covering according to the invention for which the qualities of usage are established by the physical properties obtained with the test according to the DIN standards 52 612 and 52 215.

A piece of the covering, in which the layer of soft foam is formed from a foam of polyester with a thickness of 8 mm and a bulk density of  $22 \text{ kg/m}^3$ , has in the upper part flocked cellulose cotton at a height of 3 mm by means of polyethylene fibers (density of fibers  $90 \text{ g/m}^2$ ) with a mass surface density of  $150 \text{ g/m}^2$  and at the bottom, a wallpaper weighing  $90 \text{ g/m}^2$ . This

covering presents a resistance to thermal conduction (determined in the laboratory:  $0.24 \text{ m}^2/\text{h}^\circ\text{C}/\text{kg}/\text{cal}$ ; calculated:  $0.19 \text{ m}^2/\text{h}^\circ\text{C}/\text{kg}/\text{cal}$ ) which corresponds to a hollow brick wall 13 cm thick or a gravel concrete wall 33 cm thick (quality b 160). In addition, this covering presents the following sound absorption levels, according to the frequency:

Table

TABLEAU

100 hz	11 %
200 hz	17 %
300 hz	10 %
400 hz	8 %
500 hz	27 %
750 hz	15 %
1000 hz	15 %
1800 hz	30 %
2500 hz	43 %
3000 hz	61 %
4000 hz	86 %

The insulating covering according to the invention can possibly be colored, designed and/or textured and/or embossed and impregnated after finish observation. The surface fibers can, for example, be formed from polyamide, polyester, polyether, polypropylene, copolymerization products and mixtures of these polymers and they are spread in a molten layer directly on the support by already known procedures, AND stabilized during the process of drawing and coloring. Thus, these fibers adhere very well to the support and impart excellent properties for use to the final product.

### Claims

1. Insulating covering in the form of tiles or a strip characterized by a layer of soft foam or polyester or polyether with a thickness of 1.0-30 mm, preferably 3.0-20 mm and a settled bulk density of  $20\text{-}40 \text{ kg}/\text{m}^3$ , to which is laminated, above, by discretion, a textile, fibrous mat, paper, slab foam or artificial leather support, to which are directly anchored fibers of synthetic material, and below, a textile, wallpaper, fibrous mat, or a sheet of synthetic material.

2. Insulating covering according to Claim 1, characterized by the fact that the flocked surface of the upper support presents embossed projections in relief and/or grooves, forming a texture in the form of a design.

3. Insulating covering according to one of Claims 1 and 2, characterized by the fact that the fibers are formed from polyamide, polyester, polyether, polypropylene, products of copolymerization and mixtures of the latter, and set in a layer of polymer that adheres to the support.

4. Insulating covering according to one of Claims 1-3, characterized by the fact that the lower covering has a self-adhesive covering which can be revealed by detachment of a protective layer.

5. Insulating covering according to one of Claims 1-4, characterized by the fact that it includes a layer of soft polyurethane foam with a thickness of 6 mm and a bulk density of  $22 \text{ kg/m}^3$ , flocked with polyethylene fibers above to a height of 3 mm at 90 g of fibers per  $\text{m}^2$  and laminated, below, with a wallpaper weighing  $90 \text{ g/m}^2$ .

Fig. 1

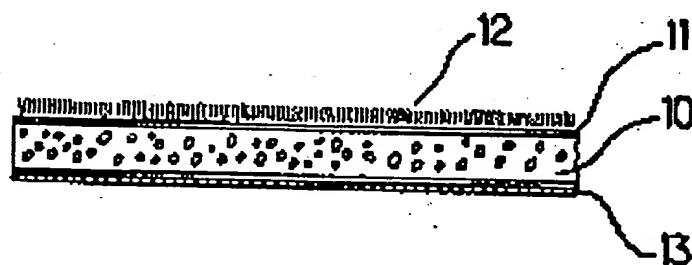


Fig. 2

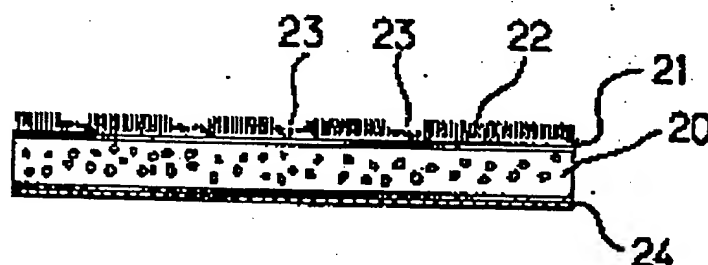


Fig. 3

